Jeanelle Marie Martinez, Ph.D.

Current Position
Toxicologist
CBRN Consequence Management
and Advisory Team (CMAT)
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WORK EXPERIENCE

Toxicologist, 7/05 - Present. CBRN Consequence Management Advisory Team (CMAT), Office of Emergency Management (OEM), Office of Solid Waste and Emergency Response (OSWER), US EPA. Cincinnati, OH 45268. Supervisor: Erica Canzler (202) 564-2359. Activities are related to providing scientific and technical Human Health Risk Assessment support to On-Scene Coordinators and Homeland Security customers for emergency responses, and major events or incidents requiring expertise. Support for projects that ensure development of products that are useful for EPA response to CBRN releases. Efforts are aimed at bridging gaps between research and field response. Scientific expertise is provided by reviewing and commenting on technical documents, maintenance of active memberships for various EPA Workgroups related to emergency response. Currently my interest lies in development of optimal indoor surface cleanup methods with emphasis placed on development of appropriate Risk Assessment methods for surface clean up goals for CWA and pesticides. We are also working on the development of recommendation for decontamination of indoor facilities that have been contaminated with inappropriate application of pesticides http://epaosc.org/site/site_profile.aspx?site_id=6792.

I am HazMat certified, trained in National Incident Management System (NIMS), and have Top Secret Clearance.

POSITION RELATED ACTIVITIES:

- Participate in a WMD Subcommittee Chemical Workgroup on development of Quick Reference Guides (QRGs). The QRGs are submitted to the National Response Team for public availability. http://www.nrt.org/Production/NRT/NRTWeb.nsf/PagesByLevelCat/Level3ChemicalHazards?Opendocument
- Participate in a National Homeland Security Response Center workgroup to develop Provisional Advisory Level Summary Documents.
- Developed a document entitled "Indoor Carbaryl Dust Cleanup Guidelines"; working on additional documents for Malathion and Fipronil.
- Developed a summary on "Factors that Impact a Surface Wipe Standard Operating Procedure" guideline. Available on request.
- Support to Region 5, Federal On Scene Coordinator Steve Renninger on the Cincinnati Malathion Field. Study. Abstract based on this field evaluation was presented at the NHSRC Decon Workshop in Nov, 2011.

- Prepared a report entitled "Field Study of Cincinnati Malathion Site - Decontamination of 2354 Warsaw Ave". Available on request.
- Prepared a "White Paper: Surface Clean Up Evaluations and Calculations for Chemical Warfare Agents". Available on request. Currently, I am revising this white for publication purposes.
- Provide input or review of NHSRC projects including PALS, evaluation of enzyme decontaminants.
- Provide review of Ohio Department of Health for Health consultations: Health Consultation for Holden Elementary School (Vapor Intrusion Issue), Health Consultation for Donnelsville Contaminated Aquifer Site (PCE contamination).
- Rotational assignment with the Risk Assessment Team in Region 6, under the supervision of Jon Rauscher. Nov 2007 – Mar 2008. Gained an understanding of the role that regional Risk Assessors play in the Superfund Process.
    - Experience was gained in evaluating the exposure pathways, screening levels, ARARS, TBC and potential clean-up goals that were applicable to specific sites.
    - I developed a human health risk calculator that takes into account all exposure factors. Risk characterization of chemicals was studied in detail, to enable the appropriate calculations for cancer risk and Hazard Quotients for adults, children and industrial workers.
- Lead in the organization, development, and coordination of two "Weapons of Mass Destruction Decontamination Workshops" presented to Regions 2 and 9 in 2007.
- Development of material and instruction for the Environmental Unit Leader (ENVL) training at the Incident Management Academy for EPA emergency responders and members of the Response Support Corp.

RESEARCH EXPERIENCE

POST-DOCTORAL FELLOW, 10/99 – 7/05. Laboratory of Computational Biology and Risk Analysis, National Institute of Environmental Health Sciences, Research Triangle Park, NC 27709. Mentor: Dr. Nigel J. Walker. I was a member of the National Toxicology Program in the Laboratory of Computational Biology and Risk Analysis part of The Intramural Program of NIEHS. For my research I used microarray analysis as a tool to measure changes in gene expression by environmental agents (Toxicogenomic) in an effort to provide clues to elucidate mechanisms by which environmental chemicals elicited their effects. We investigated changes in gene expression in human lung epithelial cells by TCDD. The results show that TCDD exposure leads to an activation of a network of signal transduction pathways and predicts a disruption of cell growth and differentiation. Additional studies were conducted to prove that alteration of these gene signaling pathways would lead to altered cellular effects. These pathways included the confirmed interferon suppression by TCDD and an attenuation in retinoid induced cell differentiation and suppression of cell growth. These evaluations of the signaling pathways altered by TCDD lead to the development of predictive mathematical models for evaluation of hypothetical signaling pathways using data from microarray analysis.

Studies were also conducted in collaboration with Dr. Thomas Eling, Laboratory of Molecular Carcinogenesis on how TCDD altered gene expression. The expression of EGR-1, an important transcription factor, was altered by TCDD and was selected for further study. We found that TCDD did not directly affect the transcription of EGR1, but rather, the increase in expression was due to increase in RNA stabilization. EGR1 is a pivotal gene in this signaling pathway that can lead to increase cell growth or cell death. This study points to a unique effect of TCDD on a pathway that could provide some explanation for the pro-carcinogenic affect of TCDD.

Technical Skills:

Molecular Biology: PCR (Real Time RT-PCR and Absolute quantitative); Primer design and validation, Gene expression profiling - Design, develop and validate primers, analyze microarray data; Flow Cytometry - Analysis of apoptosis using PI and annexin V staining; DNA/RNA extractions and electrophoresis, DNA subcloning, Transfection of promoter constructs and analysis of luciferase assays, Protein purification and immunoblotting.

Systems Biology: In vitro cell proliferation, and toxicity assessments, design, conduct and analyze in vitro experiments, determination of tumorigenicity; in vitro soft agar assay, in vivo nude mouse tumor assay.

Bioinformatics: Microarray data analysis, gene expression profiling and clustering, novel gene pathway discovery, comparative genomics. Pathway signaling determinations were performed using Pathway Assist, and Ingenuity Pathway Analysis. I have performed a variety of analysis using the following software; Gene Spring, Rosetta Resolver, GraphPad Instat, Statview.

PRE-DOCTORAL FELLOW, 9/94 - 8/99. Department of Experimental Gynecology, University of Texas at M.D. Anderson Cancer Center, Houston, TX 77030. Mentor: Dr. Lovell A. Jones. Title of dissertation is "Estrogenic Action of PCBs in the BALB/c Mouse."

For my doctoral thesis I studied the long-term effects on reproductive tract of mice exposed to estrogenic chemicals. When OH-PCBs were used as a mixture, we found that there was a change in the type of cervicovaginal tract tumor found, shifting from predominantly squamous cell carcinomas to adenosquamous cell carcinoma. From our results, we concluded that the individual OH-PCBs tested were estrogenic and tumorigenic when exposure occurs during development of the reproductive tract of mice. These data support the hypothesis that mixtures of chemicals can act differently and un-expectantly as compared to the individual compounds. In addition, I gave lectures in related subjects of Anatomy and Physiology at Houston Community College.

Technical Skills:

Northern blot analysis, study design for in vivo experiments; short term, small scale, long term, large scale carcinogenicity bioassay, subcutaneous mouse injections and ovariectomies routinely performed, monitor animals daily for premature vaginal opening, necropsies, histology procedures performed on mice tissue samples; fixation in formalin, embedded in paraffin, sliced tissues, immunohistochemistry.

GRADUATE RESEARCH ASSISTANT, 1/92 - 8/93. Department of Biology, New Mexico State University, Las Cruces, NM 88001. Mentor: Dr. Ceil Ann Herman. I developed and optimized radioimmunoassays for prostaglandins and leukotrienes that became the standardized assay for the laboratory.

SUMMER INTERNSHIP, 7/89 - 11/89. Department of Environmental Affairs, Occidental Chemical Corporation, Niagara Falls, NY. Supervisor: Dr. Ladd Smith. Performed literature reviews on toxicology data that was obtained and summarized for Material Safety Data Sheets. Filled out chemical information questionnaires and answered FAQs.

UNDERGRADUATE RESEARCHER, 10/85 - 5/89. Department of Biology, New Mexico State University, Las Cruces, NM 88001. Mentor: Dr. Ceil Ann Herman. I developed and optimized radioimmunoassays for prostaglandins and leukotrienes that became the standardized assay for the laboratory.

SUMMER INTERNSHIP, 5/88 - 8/88. Department of Biology, Brown University, RI and Mount Desert Island Biological Laboratories, Mount Desert Island, ME. Supervisor: Dr. Leon Goldstein. I drew blood from skates and measured the amino acid taurine after treatment with epinephrine. I also measured prostaglandins and leukotrienes by radioimmunoassay.

EDUCATION

1993 - 1999 **Doctor of Philosophy** in Biomedical Sciences, Program of **Toxicology**, Graduate School of Biomedical Sciences at The University of Texas, M.D. Anderson Cancer Center, Department of Experimental Gynecology/Oncology, Houston, Texas, 77030.

1991 – 1993 **Masters of Science** in Biology, New Mexico State University, Las Cruces NM, 88001. Research focus was in the area of **Endocrinology / Physiology**.

1984 - 1989 **Bachelor of Science** in Biology, Option in Animal Physiology, New Mexico State University, Las Cruces NM, 88001.

MEMBERSHIPS IN SCIENTIFIC ORGANIZATIONS

Society of Toxicology
Ohio Chapter Society of Toxicology

REVIEWER FOR SCIENTIFIC JOURNALS

Toxicology and Applied Pharmacology.
Environmental Health Prospective

DEPLOYMENTS/EXERCISES

- Deployments to INS (Hurricane Katrina/Rita) as an Environmental Unit Leader, Technical Specialist, Field Observer, Medical Unit Leader, and Assistant Safety Officer. Sept 2006 – May 2006.
- Acted as the ENVL at R5 IMT exercise, R5 SONS07, and R9 TOPOFF4
- Player in the Chem OTD Tabletop exercise for the Dulles Airport, MA '10 and Los Angeles, CA '08
- Evaluator for Region 7 at the Earthquake National Level Exercise 2011.

COMMITTEES/WORKGROUPS

- Member of the Government Liaison Group for the National Academy of Sciences Committee on Emerging Science for Environmental Health Decisions.
- Member of the US EPA / NHSRC Provisional Advisory Levels Scientific Workgroup.

PEER REVIEWED PUBLICATIONS

2006 Baek SJ, Okazaki R, Lee SH, **Martinez J**, Kim JS, Yamaguchi K, Mishina Y, Martin DW, Shoieb A, McEntee MF, Eling TE. Nonsteroidal anti-inflammatory drug-activated gene-1 over expression in transgenic mice suppresses intestinal neoplasia. Gastroenterology; 131(5):1553-60.

2006 **Martinez JM**, Sali T, Okazaki R, Anna C, Hollingshead M, Hose C, Monks A, Walker NJ, Baek SJ, Eling TE. Drug-induced expression of nonsteroidal anti-inflammatory drug-activated gene/macrophage inhibitory cytokine-1/prostate-derived factor, a putative tumor suppressor, inhibits tumor growth. J Pharmacol Exp Ther.;318(2):899-906.

2005 **Jeanelle Martinez**, Stephens LC, Lovell A Jones. Long-term effects of neonatal exposure to hydroxylated polychlorinated biphenyls in the BALB/cCrgl mouse. Environ Health Perspect. 113(8):1022-6.

2005 Seung Joon Baek, Jong-Sik Kim, Scott M. Moore, Seong-Ho Lee, **Jeanelle Martinez**, and Thomas E. Eling. COX inhibitors induce the expression of an anti-tumorigenic protein, NAG-1 via transcription factor EGR-1. Mol Pharmacol.;67(2):356-64.

2004 **Jeanelle Martinez**, Seung Joon Baek, Thomas Eling, Nigel J. Walker. EGR1 is a novel target for AhR agonists in human lung epithelial cells. Toxicology Science Dec; 82(2):429-35.

2004 Hiroyoshi Toyoshiba, Takeharu Yamanaka, Frederick. M. Parham, Nigel. J. Walker, **Jeanelle Martinez** and Christopher Portier. Gene interaction network suggests dioxin induces a significant linkage between aryl hydrocarbon receptor and retinoic acid receptor beta. Environ Health Perspect.;112(12):1217-24.

2004 Frank G. Bottone, Jr., **Jeanelle M. Martinez,** Brenda Alston-Mills, and Thomas E. Eling. Gene Modulation by Cox-1 and Cox-2 Specific Inhibitors in Human Colorectal Carcinoma Cancer Cells. Carcinogenesis, 25:1-9.

2003 Frank G. Bottone, **Jeanelle M. Martinez**, Jennifer B. Collins, Cynthia A. Afshari, Thomas E. Eling. Gene modulation by the cyclooxygenase inhibitor, Sulindac Sulfide, in Human Colorectal Carcinoma Cells: Possible Link to Apoptosis. J Biol Chem. Jul 11; 278(28): 25790-25801.

2002 **Martinez J,** Afshari C, Bushel P, Martin K, Masuda A, Takahashi T, and Walker N. Differential Toxicogenomic Responses to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin in Malignant and Nonmalignant Human Airway Epithelial Cells. Toxicological Sciences, 69: 409-423

2001 **Martinez J**, Afshari C, Bushel P, Martin K, Masuda A, Takahashi T, and Walker N. Gene Expression Profiling In TCDD-Treated Human Lung Cells. Organohalogen Compounds, 53:320-323.

2001 Kerr MK, Afshari CA, Bennett L, Bushel P, **Martinez JM**, Walker NJ, and. Churchill GA. Statistical Analysis of a Gene Expression Microarray Experiment with Replication. Statistica Sinica, 12(1); 203-215.

2000 **Martinez J**, Masuda A., Takahashi T., and Walker N. TCDD Responsiveness of a Nonmalignant Human Lung Peripheral Epithelial Cell Line. Organohalogen Compounds, 49:155-158.

1994 **Martinez JM**, Chapnoff D, Romero M, and Herman CA. Eicosanoid Synthesis from Bullfrog Brain. Journal of Experimental Zoology, 269(4); 298-307.

1989 **Martinez JM**, Herman CA, Brill S, and Goldstein L. Volume Regulation in Skate (*Raja erinacea*) Red Blood Cells: No Role for Eicosanoids. Mt. Desert Island Biological Bulletin, pp. 65-67.

1988 Herman CA and **Martinez JM**. Epinephrine Stimulates Prostaglandin Synthesis in Bullfrog Lung from Warm-acclimated, but Not Cold-acclimated Animals. Journal of Experimental Zoology, 248;101-108.

BOOK CHAPTERS AND INVITED ARTICLES

2004 **Jeanelle M. Martinez** and Nigel J. Walker. Real-time and Quantitative PCR: Principles and Applications in Toxicogenomics. Chapter in Toxicogenomics: Principles and Applications. July 2004.

2003 **Jeanelle M. Martinez**, Michael J. DeVito, Linda S. Birnbaum, and Nigel J. Walker. Toxicology of Dioxin and Dioxin-like Compounds. Chapter 4 in Dioxins and Health.

HONORS/SCHOLARSHIPS/AWARDS

2008 - 2011	US EPA Individual Cash Award NRB
2005	Best Paper Advancing the Science of Risk Assessment for 2005 by the Risk Assessment Specialty Section of Society of Toxicology. http://www.niehs.nih.gov/news/newsletter/2005/april/science-ntp.cfm
2004	AACR-Inglenook Vineyards Scholar-in-Training Award, AACR mini-symposium presentation in Orlando, Fl.
2004	Fellows Award for Research Excellence (FARE) Travel Award, NIH Fellows Committee
2003	North Carolina Society of Toxicology Presidents Award for Research Competition (PARC) 2003
2003	AACR Minority Travel Award – poster presentation at the AACR annual meeting in Washington D.C.
2001	Fellows Award for Research Excellence (FARE) Travel Award 2001 –poster presentation at the annual SOT meeting in Nashville, TN
1999	AACR Minority Travel Award – poster presentation at the AACR annual meeting in Toronto, Canada
1999	GSBS Travel Award – poster presentation at the SOT meeting in New Orleans, LA
1994-1999	Minority Access Research Careers, NIH Pre-doctoral Fellowship
1994-1997	American Auxiliary Legion Fellowship
1995-1996	UT Environmental Awareness Scholarship
1993	Chicano Faculty Staff Caucus Scholarship
1988-1989	Minority Access Research Careers (MARC) Honors Student
1988	Sigma Xi undergraduate research award
1885-1988	Minority Biomedical Research Subjects (MBRS) Careers Student

REFERENCES

Dr. Thomas Eling Principal Investigator, Laboratory of Molecular Carcinogenesis NIEHS, MD E4-09 Research Triangle Park, NC 27709 Email: eling@niehs.nih.gov (919) 541-3911	Dr. Christopher J. Portier Director Agency for Toxic Substances and Disease Registry, and National Center Environmental Health 4770 Buford Hwy NE Atlanta, GA 30341 Email: cportier@cdc.gov (919) 308-8104

Dr. Nigel Walker Deputy Division Director for Science, NTP Adjunct, Toxicology Branch NIEHS, MD D4-01 PO Box 12233 Research Triangle Park, NC 27709 Email: walker3@niehs.nih.gov (919) 541- 4893	Amy Mysz Environmental Health Scientist U.S. Environmental Protection Agency 77 W. Jackson Blvd. LC-8J Chicago, IL 60604 Email: mysz.amy@epa.gov (312) 886-0224
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